No.



8300130

HHE UNITHED SHAVES OF ANTERIOA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Jacob Hartz Seed Co., Inc.

Talkereas, there has been presented to the

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT TY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT

SOYBEAN

'Hartz 5252'

In Esstimony Watercot, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington this 26th day of October in the year of our Lord one thousand nine hundred and eighty-four.

Altest.

Level H. Heren
Commissioner

Plant Variety Protection Office
Livestock, Meat, Grain & Seed
Agricultural Marketing Service

Land R. Block Georgian of Agriculture

LIVESTOCK, MEAT,	U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE LIVESTOCK MEAT GRAIN & SEED DIVISION					FORM APPROVED: OMB NO.0581-005			
LIVESTOCK, MEAT, GRAIN & SEED DIVISION					or plant variet				
APPLICATION FOR PLANT VAI	RIETY PROTE	CTION CERTIFICATE	_	n form ha	uniess a com: s been receive				
1. NAME OF APPLICANT(S)		2. TEMPORARY DESIGNAT	10N 3. V	ARIETY N	AME	~> ~> ¹			
Jacob Hartz Seed Co., Inc. H76-502				Undecided N/5					
4. ADDRESS (Street and No. or R.F.D. No., City, S	tate, and Zip Code)	5. PHONE (Include area code			ICIAL USE OF	VLY'			
P. O. Box 946, N. Park Avenue Stuttgart, Arkansas 72160	•	501/673-8565	PVP	O NUMBEF	300 13 0	.			
6. GENUS AND SPECIES NAME	- FAMILY NA			DATE	OVOLU	<u> </u>			
	7. FAMILY NAME (Botanical)			5/11.	<u> </u>				
Glycine max	Legi	uminosea 	FILING	8:00	A.M.	P.M.			
8. KIND NAME	9.	DATE OF DETERMINATION		AMOUNT	FOR FILING	•			
Soybean		1981	RECEIVED	\$ 1,000 DATE					
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Corporat	tion		\ \tag{\mathref{H}}	DATE					
11. IF INCORPORATED, GIVE STATE OF INCOR	PORATION	0	12, 0	12, DATE OF INCORPORATION					
13. NAME AND ADDRESS OF APPLICANT REPR	ESENATIVE(S) IE	Arkansas	LICATION		.948	PERS			
		•	LICATION	AND 1120		2115			
Jacob Ha P. O. Bo	ertz Seed Co.	., Inc.							
Stuttgar)		•					
4. CHECK APPROPRIATE BOX FOR EACH ATTA					, in the Medica, a				
a. X Exhibit A, Origin and Breeding History of the Section 52 of the Plant Variety Protection		c. Exhibit C, Object from Plant Variet	ive Descripti y Protection	ion of the V Office.)	ariety (Reques	t form			
		c. Exhibit C, Object from Plant Variet d. Exhibit D, Additi	y Protection	Office.)		t form			
Section 52 of the Plant Variety Protection	Act.)	d. X Exhibit D, Additi	y Protection onal Descrip AME ONLY	Office.)	Variety ASS OF CERTI	FIED R			
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EXHIBIT A

ORIGIN AND BREEDING HISTORY OF THE VARIETY

HARTZ 5252

<H76-5027originated from one F_2 plant selected at Stuttgart in the fall of
1976 from the cross 'Forrest' x 'Mack'. Seed from the F_2 plant was grown in an F_3 plant row (Row 502) in Belize, Central America the winter of 1976-1977 and
harvested in bulk. The F_4 generation was grown in an observation nursery at
Stuttgart in 1977. It appeared uniform for all morphological characters except
flower color. It was yield tested without further selection until 1980 when single
plant rows were grown for purification.

<H76-5027was screened for resistance to phytophthora root rot Races 1, 2, 3, 4 and 7; for resistance to the soybean cyst nematode Races 3 and 4; and for resistance to the reniform nematode in the greenhouse at Stuttgart. It was screened for resistance to bacterial pustule under natural conditions in the field at Stutt-HARTZ 52521 gart. <H76-502>was screened for resistance to root-knot nematode (Meloidogyne incognita) in an infested field at Keo, Arkansas.

*/HPRTZ 5252'
<H76-502; was yield tested in Jacob Hartz Seed Company tests in 1980-1982. It was tested in state experiment station tests in Missouri, Arkansas and Tennessee in 1982.

HARTZ 5252'

Evidence of Stability: #76-502 breeds true for flower color, maturity date, plant height, pubescence color, hilum color, reaction to phytophthora root rot, soybean cyst nematode, reniform nematode and bacterial pustule.

<u>Kinds of Variants</u>: #76-502 may have white flowering, tawny pubescent plants producing seed with black hila at a frequency of two per pound.

HONTZ

8300130

Telephone (501) 673-8565/TWX: 910-720-6244 SEED P.O. Box 946 — Stuttgart, Arkansas 72160 Company, Inc.

June 20, 1984

Mr. Robert J. Snyder, Examiner Plant Variety Protection Office National Agricultural Library Building Beltsville, MD 20 70 5

Dear Mr. Snyder:

EXHIBIT A

Subject: Soybean Applications: No. 8300126 'Hartz 5171'

No. 8300127 'Hartz 6383' No. 8300128 'Hartz 5370' No. 8300129 'Hartz 7126' No. 8300130 'Hartz 5252'

This is in response to your letter of May 31 concerning the uniformity and stability of the five Hartz soybean varieties listed above.

- 1. Uniformity: The variants described in Exhibit A of the Application for Plant Variety Protection are acceptable to the industry. They do not represent either a nutritional or economic effect on the variety for either the farmer or end user. Each year we have tried unsuccessfully to eliminate all the variants by roguing. However, the variants have not exceeded those listed in Exhibit A.
- Stability: Each of the varieties are stable for the major morphological characters. The seed can be produced through three generations from Breeders seed (Foundation through Certified seed) without significant change. However, the usual care in roguing, combining, and seed cleaning must be followed as with all varieties. Hartz 5171, Hartz 6383, Hartz 7126, and Hartz 5252 have been produced for two years under commercial conditions and were inspected in the field and laboratory by the Arkansas State Plant Board for certification. Hartz 5370 was grown commercially for the first time in 1983. We have had certification problems with a few lots, but the problems were all judged to be due to mechanical mixture.

Thank you.

Sincerely,

JACOB HARTZ SEED COMPANY, INC.

Cutter Well ins

Curtis Williams Director of Research

CW/mjt

EXHIBIT B

NOVELTY STATEMENT

HARTZ 5252

It can be distinguished from other Group V cultivars by various morphological and disease resistance characters.

Most Similar Variety: <H76-5027 is most similar to Mack, however, HARTZ 5252' <H76-5027 is about 9 cm. taller than Mack and matures one day later than Mack.

Mack.

Telephone (501) 673-8565/TWX: 910-720-6244 **SEED** P.O. Box 946 — Stuttgart, Arkansas 72160 Company, Inc.

October 21, 1983

EXHIBIT B

Mr. Robert J. Snyder, Examiner Plant Variety Protection Office National Library Building Beltsville, MD 20705

Dear Mr. Snyder:

Subject: Soybean Application No. 8300130 Hartz 5252 (H76-502)

Enclosed are statistical data from various years and locations comparing plant height of Hartz 5252 and 'Mack' soybeans. At some locations and in some years Hartz 5252 was not significantly taller than Mack at the 95 percent probability level. However, as you can see, Hartz 5252 was consistently taller in each test although the magnitude varied by years and locations. There were extremes in weather during the years covered in the table.

Table 2 shows the results from a greenhouse screening test for reaction to the reniform nematode. Hartz 5252 is resistant, while Mack is susceptible to the reniform nematode.

I trust that this is the information you needed.

Sincerely,

JACOB HARTZ SEED CO., INC.

Custis Williams

Curtis Williams Director of Research

CW/mjt Enc.



 $\underline{\text{TABLE 1.}}$ A comparison of plant height by years and locations for Hartz 5252 and Mack soybeans.

		NUMBER OF	VARIETY	L.S.D.	C.V.	
YEAR	LOCATION	REPLICATIONS	HARTZ 5252	MACK	<u> </u>	%
1979	Stuttgart	. 4	39.0*	35.7*	3.3	6.80
1980	Stuttgart	4	4 31.5		1.9	4.13
1981	Stuttgart	4	30.2	27.2	2.8	8.17
1982	Stuttgart	4	38.0	36.2	2.0	4.39
1982	Stuttgart	3	34.0	30.3	2.4	4.71
1983	Stuttgart	4	30.5	29.0	1.7	4.02

1979	Bunkie, LA	2	33.5	29.5	NS	8.55
1981	Bunkie, LA	3	37.3	36.3	4.9	9.88
1982	Bunkie, LA	2	38.0	33.5	4.3	5.91
1983	Bunkie, LA	4	33.7	31.0	2.1	4.44
1982	Clarksdale, MS	3 2	36.0	31.0	5.3	8.14

^{*} Plant height in inches

TABLE 2. Reaction of selected soybean cultivars to reniform nematode in greenhouse tests; Stuttgart, Arkansas, 1983.

	·	Average number of egg masses per root system				
	Ransom	35.3 ¹ /				
	Dare	16.1				
	Mack	13.6				
•	Forrest	9.7				
•	Foster	6.4				
	Hartz 5252	3.6				
	Least Significant Difference	05 4.4				
	Coefficient of Variation %	56.2				

1/ Average of six replications

Test duration was 36 days. Steam sterilized soil was placed in 7.6 cm plastic pots into which was added 5040 reniform nematode larvae per pot. Ratings were made on two seedlings per pot. Data was transformed by the square root method before analysis. The test was arranged in a randomized complete block design.

(Soybean)

U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE LIVESTOCK, MEAT, GRAIN & SEED DIVISION PLANT VARIETY PROTECTION OFFICE BELTSVILLE, MARY LAND 20705

OBJECTIVE DESCRIPTION OF VARIETY

SUYBEA	4/V (Grycine max L.)	
NAME OF APPLICANT(S)	TEMPORARY DESIGNATION	VARIETY NAME HARTZ 5252-
Jacob Hartz Seed Co., Inc.	H76-502	Undecided
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Cod	le)	FOR OFFICIAL USE ONLY
P. O. Box 946, N. Park Avenue Stuttgart, Arkansas 72160		8300 1 30
Choose the appropriate response which characterizes the varing your answer is fewer than the number of boxes provided,	riety in the features described l place a zero in the first box w	below. When the number of significant digits hen number is 9 or less (e.g., 0 9).
1. SEED SHAPE: 2 1 = Spherical (L/W, L/T, and T/W ratios = < 1.2) 3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)	T 2 = Spherical Flattened	(L/W ratio > 1.2; L/T ratio = < 1.2) (L/T ratio > 1.2; T/W > 1.2)
2. SEED COAT COLOR: (Mature Seed)		
1 = Yellow 2 = Green 3 = Brown	4 = Black 5 = Other	(Specify)
3. SEED COAT LUSTER: (Mature Hand Shelled Seed)		- Comment of the Comm
2 1 = Dull ('Corsoy 79'; 'Braxton') 2 = Shiny ('Nebs	oy'; 'Gasoy 17')	
4. SEED SIZE: (Mature Seed)		
1 2 Grams per 100 seeds		
5. HILUM COLOR: (Mature Seed)		
6 1 = Buff 2 = Yellow 3 = Brown	4 = Gray 5 = Imperfect Bla	ack 6 = Black 7 = Other (Specify)
6. COTYLEDON COLOR: (Mature Seed)		
1 = Yellow 2 = Green		
7. SEED PROTEIN PEROXIDASE ACTIVITY:		
1 = Low 2 = High		
8. SEED PROTEIN ELECTROPHORETIC BAND:		•
1 = Type A (SP1 ^a) 2 = Type B (SP1 ^b)		
9. HYPOCOTYL COLOR:		
1 = Green only ('Evans'; 'Davis') 2 = Green with 3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71') 4 = Dark Purple extending to unifoliate leaves ('Hodgson';		'Woodworth'; 'Tracy')
10. LEAFLET SHAPE:	1	
3 1 = Lanceolate 2 = Oval 3 = Ovate	4 = Other (Specify)	

Page 1 of 4

11. LEAFLET SIZE:	
2 = Medium ('Corsoy 79'; 'Gasoy 17') 3 = Large ('Crawford'; 'Tracy')	
12. LEAF COLOR:	
1 = Light Green ('Weber'; 'York') 2 = Medium Green ('Corsoy 79'; 'Braxton') 3 = Dark Green ('Gnome'; 'Tracy')	n
13. FLOWER COLOR:	
2 1 = White 2 = Purple 3 = White with purple throat	
14. POD COLOR:	
1 = Tan 2 = Brown 3 = Black	
15. PLANT PUBESCENCE COLOR:	
2 1 = Gray 2 = Brown (Tawny)	
16. PLANT TYPES:	
1 = Slender ('Essex'; 'Amsoy 71') 2 = Intermediate ('Amcor'; 'Braxton') 3 = Bushy ('Gnome'; 'Govan')	
17. PLANT HABIT:	•
1 = Determinate ('Gnome'; 'Braxton') 2 = Semi-Determinate ('Will') 3 = Indeterminate ('Nebsoy'; 'Improved Pelican')	
18. MATURITY GROUP:	
0 8 1 = 000 2 = 00 3 = 0 4 = I 5 = II 6 = III 10 = VII 11 = VIII 12 = IX 13 = X	7 = IV 8 = V
19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)	
BACTERIAL DISEASES:	
2 Bacterial Pustule (Xanthomonas phaseoli var. sojensis)	
0 Bacterial Blight (Pseudomonas glycinea)	
0 Wildfire (Pseudomonas tabaci)	
FUNGAL DISEASES:	
1 Brown Spot (Septoria glycines)	
Frogeye Leaf Spot (Cercospora sojina)	
- Race 1 - Race 2 - Race 3 - Race 4 - Race 5	2 Other (Specify) Race Undetermined
Target Spot (Corynespora cassiicola)	
2 Downy Mildew (Peronospora trifoliorum var. manshurica)	
O Powdery Mildew (Microsphaera diffusa)	
0 Brown Stem Rot (Cephalosporium gregatum)	
0 Stem Canker (Diaporthe phaseolorum var. caulivora)	व ,

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 =	Resistant) (Continued)	
FUNGAL DISEASES: (Continued)		1
Pod and Stem Blight (Diaporthe phaseolorum var; sojae)		
0 Purple Seed Stain (Cercospora kikuchii)		
Rhizoctonia Root Rot (Rhizoctonia solani)		
Phytophthora Rot (Phytophthora megasperma var. sojae)		
2 Race 1 2 Race 2 2 Race 3 1	Race 4 0 Race 5	0 Race 6 2 Race 7
0 Race 8 0 Race 9 Other (Specify)		
VIRAL DISEASES:		
Bud Blight (Tobacco Ringspot Virus)		
O Yellow Mosaic (Bean Yellow Mosaic Virus)		
O Cowpea Mosaic (Cowpea Chlorotic Virus)		
O Pod Mottle (Bean Pod Mottle Virus)		
Seed Mottle (Soybean Mosaic Virus)		
NEMATODE DISEASES:		
Soybean Cyst Nematode (Heterodera glycines)		
0 Race 1 0 Race 2 2 Race 3 1	Race 4 Other /	(Specify)
0 Lance Nematode (Hopiclaimus Colombus)	Outer 1	Specify .
Southern Root Knot Nematode (Meloidogyne incognita)		•
Northern Root Knot Nematode (Meloidogyne Hapla)		
Peanut Root Knot Nematode (Meloidogyne arenaria)		
2 Reniform Nematode (Rotylenchulus reniformis) OTHER DISEASE NOT ON FORM (Specify):	•	
OTTEN DISEASE NOT ON FORM (Spectry):		
20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Suscept	ible; 2 = Resistant)	
0 tron Chlorosis on Calcareous Soil		
Other (Specify)		<u> </u>
1. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Rec	sistant)	
Mexican Bean Beetle (Epilachna varivestis)		•
O Potato Leaf Hopper (Empoasca fabae)	•	
0 Other (Specify)		
2. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT	CISDAUTTED	
CHARACTER NAME OF VARIETY		
Plant Shape	CHARACTER Seed Coat Luster	NAME OF VARIETY
Leaf Shape	Seed Coat Luster Seed Size	
Leaf Color	Seed Shape	
Leaf Size	Seedling Pigmentation	
		10

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY DAYS LO		2/PLANT LODGING	3/cm PLANT	LEAFLET SIZE		4/ SEED CONTENT		5/ SEED SIZE G/100	NO. SEEDS/
	SCORE HEIGHT		CM Width	CM Length	% Protein	% Oil	SEEDS	POD	
H76-502 Submitted	0ct 6	2.2	90	N/A	N/A	41.6	21.1	12.1	2 and 3
Forrest Name of Similar Variety	0ct 5	1.9	85	Νγ̈́À	,N/A	40.9	20.7	11.8	2 and 3

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

- 1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
- 2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
- 3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A2 in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
- 4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.
- $\underline{1}$ / 9 Tests $\underline{2}$ / 17 Tests $\underline{3}$ / 16 Tests $\underline{4}$ / 14 Locations $\underline{5}$ / 11 Locations

EXHIBIT D

BASIS OF APPLICANT'S OWNERSHIP

Jacob Hartz Seed Company, Incorporated, Stuttgart, Arkansas established a plant breeding program in 1972 for the purpose of developing, releasing, and maintaining stocks of soybean varieties developed by its plant breeding program.

Dr. Curtis Williams, plant breeder, was licensed to breed soybeans by the Arkansas State Plant Board, December 9, 1977. Dr. Williams and co-workers developed and tested this variety in trials at Stuttgart, Arkansas.

EXHIBIT D

Table 1. Agronomic and other distinguishing characteristics of H76-502, Forrest and Mack soybeans in Jacob Hartz Seed Company tests.

	1HARTZ (262)	Cultivar		
Trait	< H76-5027	Forrest	Mack	
Seed Size $(g/100)^{\frac{1}{-}}$	12.1	11.8	13.7	
Maturity (day in October) $\frac{2}{}$	6	5	· -	
	3	-	2	
Plant Height (cm.) $\frac{3}{}$	90	85	-	
	89	-	80	
Lodging ⁴ /	2.2	1.9	2.4	
Flower Color	Purple	White	Purple	

^{1/} 11 Tests 2/ 9 tests with Forrest, 5 tests with Mack 3/ 16 Tests with Forrest, 12 Tests with Mack 4/ 16 Tests

Lodging was scored 1 = No Lodging to 5 = All Plants Down.